



MA 405 – 1

Special Topics in Math:

Introductory Mathematical Modelling in Biology

Semester: Winter, 2016
Days: Tues: 10:00 AM
Room: L2115

Lab – day:
Lab–Room:

Number of credits: 3

Prerequisite:
Math 30

Instructor: John Wiest
Email: jwiest@ambrose.edu
Phone: 403-410-6915
Office: L2115
Office hours: Wed @ 12:00 PM or by drop in

Course Description:

This course is designed to give students an introductory grounding in mathematical methods used in the field of Biology. Emphasis will be placed on differential equations, particularly separable and first-order differential equations, and why and how they are used in the field of biology)

Further Course Information:

The course content includes an exploration of how ideas in introductory Calculus and/or Linear Algebra are utilized within the context of biological research, and how such concepts specifically apply to problems in the field. Most of the course will be based on the students own readings and efforts to explain what they have read to the instructor.

Expected Learning Outcomes:

It is the aim of the course that students acquire the following skills:

1. Understanding the traditional problems in biology that are viewed as most amenable to mathematical modeling.
2. Understanding the theory behind how and why mathematical modeling is applicable to problems in biology

Important Dates:

First day of classes: January 6, 2016
Registration revision period: January 17, 2016
Last day to request revised examination: February 29, 2016
Last day to withdraw from course: March 18, 2016
Last day to apply for time extension for coursework: March 29, 2016
Last day of classes: April 13, 2016

Final Exam: None

Time:

Room:

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3. Gain understanding in specific mathematical methods that apply in basic biological modeling.

Outline:

TOPICS

Derivatives

Integrals

Differential Equations

- Separable
- First-Order
- Beyond First-Order

Problems in Biology

Linear Dynamical Systems

Requirements:

The student will be required to seek out some of his own resources, as well as communicating with the instructor to obtain specific resources the instructor recommends to aid the student in comprehension.

Submission of Assignments:

The student will create two separate documents for the course that will be used in assessment. These will be original works of the students and will be printed out and handed to the instructor in hard copy.

Attendance:

Student will arrange to meet with the instructor regularly to discuss progress and topics related to the course.

Evaluation:

Assignments 100%

The two assignments will each be worth 50% of the student's grade and will comprise a full elaboration on the part of the student about their understanding of the subjects, complete with examples and explanatory descriptions, showing what the student understands about each of the topics discussed above.

Grade Summary:

The available letters for course grades are as follows:

<u>Letter Grade</u>	<u>Percentage</u>	<u>Description</u>
A+	96-100%	Excellent
A	91-95%	
A-	87-90%	Good
B+	83-86%	
B	79-82%	
B-	73-78%	
C+	69-72%	Satisfactory
C	64-68%	
C-	59-63%	

D+	55%-58%	
D	50-54%	Minimal Pass
F	Below 50%	Failure

Textbooks:

Texts for this course will be discussed and negotiated between the instructor and the student, but will include the book

Policies:

All students have received an Ambrose e-mail account upon registration. It is the student's responsibility to check this account regularly as the Ambrose email system will be the professor's instrument for notifying students of important matters (Cancelled class sessions, extensions, requested appointments, etc.) between class sessions. If students do not wish to use their Ambrose accounts, it is highly recommended that they forward all messages from the Ambrose account to the other account.

During the **Registration Revision Period** students may to enter a course without permission, change the designation of any class from credit to audit and /or voluntary withdraw from a course without financial or academic penalty. These courses will not appear on the student's transcript. Courses should be added or dropped on the student portal by the deadline date, please consult the List of Important Dates. After that date, the original status remains and the student is responsible for related fees.

Students intending to withdraw from a course after the Registration Revision Period must apply to the Office of the Registrar by submitting a Request to Withdraw from a Course by the **Withdrawal Deadline**, please consult the List of Important Dates. Withdrawal from courses after the Registration Revision period will not be eligible for tuition refund. A grade of "W" will appear on the student's transcript.

Students wishing to withdraw from a course, but who fail to do so by the applicable date, will receive the grade earned in accordance with the course syllabus. A student obliged to withdraw from a course after the Withdrawal Deadline because of health or other reasons may apply to the Registrar for special consideration.

Students, who find a conflict in their exam schedule must submit a **Revised Examination** Request form to the Registrar's Office by the deadline date, please consult the List of Important Dates. Requests will be considered for the following reasons only: 1) the scheduled final examination slot conflicts with another exam; 2) three final exams within three consecutive exam time blocks; 3) the scheduled final exam slot conflicts with an exam at another institution; 4) extenuating circumstances. Travel is not considered a valid excuse for re-scheduling or missing a final exam.

Electronic Etiquette

Students are expected to treat their instructor, guest speakers, and fellow students with respect. It is disruptive to the learning goals of a course or seminar and disrespectful to fellow students and the instructor to engage in electronically-enabled activities unrelated to the class during a class session. Please turn off all cell phones and other electronic devices during class. Laptops should be used for class-related purposes only. Please do not use iPods, MP3 players, or headphones. Do not text, read, or send personal emails, go on Facebook or other social networks, search the internet, or play computer games during class. The professor has the right to disallow the student to use a laptop in future lectures and/or to ask a student to withdraw from the session if s/he does not comply with this policy. Repeat offenders will be directed to the Dean. If you are expecting communication due to an emergency, please speak with the professor before the class begins.

Academic Policies

It is the responsibility of all students to become familiar with and adhere to academic policies as stated in the Academic Calendar. Personal information, that is information about an individual that may be used to identify that individual, may be collected as a requirement as part of taking this class. Any information collected will only be used and disclosed for the purpose for which the collection was intended. For further information contact the Privacy Compliance Officer at privacy@ambrose.edu.

Extensions

Although extensions to coursework in the semester are at the discretion of the instructor, students may not turn in coursework for evaluation after the last day of the scheduled final examination period unless they have received permission for a "**Course Extension**" from the Registrar's Office. Requests for course extensions or alternative examination time must be submitted to the Registrar's Office by the deadline date, please consult the List of Important Dates. Course extensions are only granted for serious issues that arise "due to circumstances beyond the student's control".

Appeal of Grade

An appeal for change of grade on any course work must be made to the course instructor within one week of receiving notification of the grade. An appeal for change of final grade must be submitted to the Office of the Registrar in writing within 30 days of

receiving notification of the final grade, providing the basis for appeal. A review fee of \$50.00 must accompany the appeal to review final grades. If the appeal is sustained, the fee will be refunded.

Academic Integrity

We are committed to fostering personal integrity and will not overlook breaches of integrity such as plagiarism and cheating. Academic dishonesty is taken seriously at Ambrose University College as it undermines our academic standards and affects the integrity of each member of our learning community. Any attempt to obtain credit for academic work through fraudulent, deceptive, or dishonest means is academic dishonesty. Plagiarism involves presenting someone else's ideas, words, or work as one's own. Plagiarism is fraud and theft, but plagiarism can also occur by accident when a student fails or forgets to give credit to another person's ideas or words. Plagiarism and cheating can result in a failing grade for an assignment, for the course, or immediate dismissal from the university college. Students are expected to be familiar with the policies in the current Academic Calendar that deal with plagiarism, cheating, and the penalties and procedures for dealing with these matters. All cases of academic dishonesty are reported to the Academic Dean and become part of the student's permanent record.

Students are strongly advised to retain this syllabus for their records.

Other Important Dates

Feb. 15	Family Day
Feb. 16-20	Mid-Semester Break (No Classes)
Mar.1	Assignment 1
Mar. 1 – 3	Global Impact Days
Mar. 11-13	Legacy Youth Conference
Mar. 28	Ambrose Research Conference
April. 18	Assignment 2